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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/708,470	11/09/2000	Toshiro Sato	001399	1566

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EXAMINER	
SHARON, AYAL I	
ART UNIT	**PAPER NUMBER**
2123	14

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PEG

Office Action Summary	Application No.	Applicant(s)	
	09/708,470	SATO ET AL.	
	Examiner	Art Unit	
	Ayal I Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-20 and 22-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,2,4-10,12-20 and 22-36* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-36 of U.S. Application 09/708,470 filed on 11/09/2000, (and with a PCT priority date of 04/20/1999, and with a priority date of 05/14/1998 for Japanese Patent 10-132196), are presented for examination. Claims 1 and 19 were amended in paper #7. Independent Claims 1 and 19 were further amended in the most recent amendment, paper #13, to include the limitations of dependent Claims 3 and 21 (which were cancelled in paper #13).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The prior art used for these rejections is as follows:
4. Purks, U.S. Patent 5,481,695. (Henceforth referred to as "**Purks**").
5. Carlson et al., U.S. Patent 6,128,769. (Henceforth referred to as "**Carlson**").

6. Rhodes, D.L. "Parallel Computation for Microwave Circuit Simulation". IEEE Transactions on Microwave Theory and Techniques. Vol.45, Issue 5. May '97. pp.587-592. (Henceforth referred to as "**Rhodes**").
7. Huang, U.S. Patent 5,568,395. (Henceforth referred to as "**Huang**").
8. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.
9. **Claims 1-2, 4-6, 13, 19-20, 22-24, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Purks in view of Carlson.**
10. **Claims 7-8 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Purks in view of Carlson and further in view of Official Notice, and further in view of Rhodes.**
11. **Claims 9-10, 12, 14, 27-30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Purks in view of Carlson and further in view of Huang.**
12. In regards to Claim 1, Purks teaches the following limitations:

1. A noise checking method used upon circuit designing for checking noise which has an influence on a signal waveform which propagates in a noticed wiring line on a design object circuit, ~~characterized in that it comprises~~ comprising the steps of:
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

producing a simulation model of a circuit portion relating to the noticed wiring line;
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

However, Purks only expressly teaches cross-talk noise, and not other types of noise as claimed in the following limitations.

Carlson, on the other hand, does expressly teach the use of switching noise as well as cross-talk noise.

performing a simulation using the simulation model to calculate a signal waveform which propagates in the noticed wiring line and calculate ~~a noise waveform superposed on the signal waveform~~ in the noticed wiring line for ~~each kind~~ a plurality of kinds of noise;
(Carlson, especially: col.3, lines 1-40; and col.4, lines 18-40)

synthesizing with generation timings of the noise waveforms taken into consideration the signal waveform and the noise waveforms calculated for ~~individual~~ each of the plurality of kinds of noise ~~with generation timings of the noise waveforms taken into consideration~~ to obtain a noise composite waveform which is the signal waveform on which the noise is superposed; and
(Carlson, especially: col.3, line 52 to col.5, line 34;)

performing noise checking based on the noise composite waveform.
(Carlson, especially: Eq.1 in col.4; col.4, lines 18-40)

wherein when the noise checking is performed,
(Carlson, especially: col.3, line 41 – col.5, line 17)

a maximum delay time and a minimum delay time of the noticed wiring line are extracted from the noise composite waveform,
(Carlson, especially: col.3, line 41 – col.5, line 17)

and overdelay / racing checking for the noticed wiring line is performed using the maximum delay time and the minimum delay time.
(Carlson, especially: col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

13. In regards to Claim 2, Purks teaches the following limitations:

2. The noise checking method as set forth in claim 1, characterized in that, where an adjacent wiring line to the noticed wiring line is turned back in such a manner as to have a plurality of proximate portions which can electrically interfere with the noticed wiring line,

(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

simulation models are produced with regard to the individual proximate portions of the adjacent wiring line and the noticed wiring line and the noise waveforms are calculated using the simulation models,

(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

and then the noise waveforms calculated with regard to all of the proximate portions and the signal waveform are synthesized with generation timings of the noise waveforms taken into consideration.

(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

14. In regards to Claim 4, Purks does not expressly teach the following limitations.

However, Carlson does expressly teach the following limitations:

4. The noise checking method as set forth in claim 1, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform,

(Carlson, especially: col.3, line 41 – col.5, line 17)

when the noise checking is performed, a pulse period of the noise composite waveform is calculated from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for the signal waveform,

(Carlson, especially: Fig.4, Fig.5 and col.4, line 18 – col.4, line 40)

and pulse period checking of the clock waveforrn in the noticed wiring line is performed based on the pulse period.

(Carlson, especially: Fig.5 and col.5, lines 35-57)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

15. In regards to Claim 5, Purks does not expressly teach the following limitations. However, Carlson does expressly teach the following limitations:

5. The noise checking method as set forth in claim 1, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform, when the noise checking is performed, a rising width and a falling width of the noise composite waveform are calculated from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for the signal waveform, and pulse width checking of the clock waveform in the noticed wiring line is performed based on the rising width and the falling width.
(Carlson, especially: Fig.4, Fig.5 and col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

16. In regards to Claim 6, Purks does not expressly teach the following limitations. However, Carlson does expressly teach the following limitations:

6. The noise checking method as set forth in claim 1, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform, when the noise checking is performed, a time required for the noise composite waveform to rise and another time required for the noise composite waveform to fall are calculated from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for the signal waveform, and checking of the rising time/falling time of the clock waveform in the noticed wiring line is performed based on the times.

(Carlson, especially: Fig.4, Fig.5 and col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

17. In regards to Claim 7, Purks expressly teaches the use of UNIX-based stations on a network (see Purks, especially: Fig.3, Item 304; col.3, lines 36-41;). Official Notice is given that is well known in the art that the multi-threading and multi-tasking functions of UNIX operating system enable the creation of software applications that can take advantage of the parallel processing capabilities of multi-processor machines such as Sun Microsystems™ workstations.

However, Purks does not expressly teach the following limitations:

7. The noise checking method as set forth in claim 1, characterized in that, when the simulation is performed, the simulation model is divided into a plurality of files, and simulations with regard to the plurality of files are executed individually by a plurality of processing sections of a parallel

> processor which operate parallelly, whereafter simulation result files by said plurality of processing sections are combined.

Rhodes does expressly teach the dividing of a simulation model into a plurality of files and running the files parallely on a parallel processor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with the teachings of Rhodes because "Typical MPC's [Massively Parallel Computers] allow for tens to several hundred or even thousands of nodes, and thus in principle offer the ability to apply a large amount of computational power and memory to a problem." (Rhodes, p.587, col.1, lines 4-7)

18. In regards to Claim 8, Purks expressly teaches the use of UNIX-based stations on a network (see Purks, especially: Fig.3, Item 304; col.3, lines 36-41;). Official Notice is given that is well known in the art that the multi-threading and multi-tasking functions of UNIX operating system enable the creation of software applications that can take advantage of the parallel processing capabilities of multi-processor machines such as Sun Microsystems™ workstations.

However, Purks does not expressly teach the following limitations:

> 8. The noise checking method as set forth in claim 1, characterized in that, when the simulation is performed, the simulation model is divided into a plurality of files, and simulations with regard to the plurality of files are executed individually by a plurality of processing sections interconnected over a network, whereafter simulation result files by said plurality of processing sections are combined.

Rhodes does expressly teach the dividing of a simulation model into a plurality of files and running the files parallely on a parallel processor. Moreover, Rhodes expressly teaches an implementation called "message passing" (p.588 and Fig.1(b) and Fig.1(c)), where processing nodes communicate with one another. This communication must inherently be on some sort of network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with the teachings of Rhodes because "Typical MPC's [Massively Parallel Computers] allow for tens to several hundred or even thousands of nodes, and thus in principle offer the ability to apply a large amount of computational power and memory to a problem." (Rhodes, p.587, col.1, lines 4-7)

19. In regards to Claim 9, Purks teaches the display of routing information:

9. The noise checking method as set forth in claim 1, characterized in that it further comprises the steps of:

performing a noise analysis with regard to the noise composite waveform;
(Purks, especially: Fig.4, Items 400, 410, 414 and 416)

Also, Purks teaches the use of a user interface, and more specifically, "a keyboard and/or mouse", both of which can be used to move a cursor ("pointing device") on the screen.

calculating, if the questionable wiring line displayed on said display section is moved on said display section by means of a pointing device, an actual movement amount of the questionable wiring line corresponding to an amount of the movement by said pointing device;
(Purks, especially: Fig.3, Item 300 and col.3, lines 12-25)

performing, in the state wherein the questionable wiring line is moved by the actual movement amount, the production of the simulation model, the simulation, the synthesis of the noise composite waveform and the noise checking again; and
(Purks, especially: Fig.3, Item 300 and col.3, lines 12-25)

displaying, if a questionable wiring line which has a bad influence on the noticed wiring line is found by the noise analysis , a wiring line pattern including the noticed wiring line and the questionable wiring line on a display section;
(Purks, especially: col.2, lines 25-59)

However, Purks does not expressly teach the display of rerouted circuit layout information.

Huang does expressly teach the display of rerouted circuit layout information:

displaying the noise composite waveform after the movement of the questionable wiring line on said display section.
(Huang, especially: Fig.2, Items 204, 206, 208, 210 and 212; and col.5, lines 50-62)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

20. In regards to Claim 10, Purks teaches the following limitations:

10. The noise checking method as set forth in claim 1, characterized in that it further comprises the steps of:

performing a noise analysis with regard to the noise composite waveform;
(Purks, especially: Fig.4, Items 400, 410, 414 and 416)

Purks teaches the display of routing information (see Fig.4, Items 400, 410, and 414) in the limitations below. However, Purks does not expressly teach the display of rerouted circuit layout information.

Huang does expressly teach the display of rerouted circuit layout information:

displaying, if a noise waveform which has a bad influence on the noticed wiring line is found by the noise analysis, the noise waveform on a display section; and
(Huang, especially: Fig.2, Items 210 and 212; and col.5, lines 50-62)

calculating, if the noise waveform displayed on said display section is moved on said display section by means of a pointing device, a timing changing amount of the noise waveform corresponding to an amount of the movement by said pointing device and dynamically changing a generation timing of the noise waveform by the timing changing amount.
(Huang, especially: Fig.2, Items 210 and 212; and col.5, lines 50-62)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

21. In regards to Claim 12, Purks does not expressly teach the calculation of pin resistance, and its effect on signal integrity. Huang, on the other hand, does teach the following limitations:

12. The noise checking method as set forth in claim 1, characterized in that it further comprises the steps of:

calculating, where ringing is superposed on the noise composite waveform, a damping resistance value with which the ringing can be eliminated if

the damping resistor is added to the noticed wiring line;

displaying candidate part data corresponding to the damping resistance value on said display section;

performing, in a state wherein a part selected from among the candidate part data is added to the noticed wiring line, the production of the simulation model, the simulation, the synthesis of the noise composite waveform and the noise checking again; and

displaying the noise composite waveform after the addition of the part on said display section.
(Huang, especially: col.9, line 23 - col.11, line 6)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

22. In regards to Claim 13, Purks does not expressly teach the distributions of the minimum and maximum values of time axis waveforms. Carlson does teach the following limitations:

13. The noise checking method as set forth in claim 1, characterized in that, in order to obtain the noise composite waveform,
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

time axis direction distributions of a maximum value and a minimum value of the signal waveform with a delay variation taken into consideration are calculated
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

and time axis direction distributions of a maximum value and a minimum value of a noise waveform with a noise generation timing variation taken into consideration are calculated for each kind of noise, and

(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

time axis direction distributions of the maximum value and the minimum value obtained by synthesizing the time axis direction distributions of the maximum value and the minimum value of the signal waveform and the time axis direction distributions of the maximum value and the minimum value of the noise waveforms are used as the noise composite waveform.

(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

23. In regards to Claim 14, Purks does not expressly teach checking if the minimum and maximum values of time axis waveforms satisfy the expected values for a check object pin.

Carlson, on the other hand, does teach the calculation of resistance pin values, and determining circuit elements and delays, as claimed in the following limitations:

14. The noise checking method as set forth in claim 13, characterized in that, when the noise checking is performed, it is discriminated whether or not both of the time axis direction distributions of the maximum value and the minimum value of the noise composite waveform satisfy logical expected values for a check object pin.

(Carlson, especially: col.3, line 57 to col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

24. In regards to Claim 19, Purks teaches the following limitations:

19. A noise checking apparatus used upon circuit designing for checking noise which has an influence on a signal waveform which propagates in a noticed wiring line on a design object circuit, ~~characterized in that it comprises~~ comprising:
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

a model production section (3) for producing a simulation model of a circuit portion relating to the noticed wiring line;
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

However, Purks only expressly teaches cross-talk noise, and not other types of noise as claimed in the following limitations.

Carlson, on the other hand, does expressly teach the use of switching noise as well as cross-talk noise.

a simulation section (4) for performing a simulation using the simulation model produced by said model production section (3) to calculate a signal waveform which propagates in the noticed wiring line and calculate a noise waveform superposed on the signal waveform in the noticed wiring line for ~~each kind~~ a plurality of kinds of noise;
(Carlson, especially: col.3, lines 1-40; and col.4, lines 18-40)

a noise waveform synthesis section (5) for synthesizing with generation timings of the noise waveforms

taken into consideration the signal waveform and the noise
waveforms calculated by said simulation section (4)
to obtain a noise composite waveform which is the signal waveform on
which the noise is superposed; and
(Carlson, especially: col.3, line 52 to col.5, line 34;)

a noise checking section (6) for performing
noise checking based on the noise composite
waveform obtained by said noise waveform synthesis
section (5);
(Carlson, especially: Eq.1 in col.4; col.4, lines 18-40)

wherein said noise checking section (6)
(Carlson, especially: col.3, line 41 – col.5, line 17)

extracts a maximum delay time and a minimum delay time
of the noticed wiring line from the noise composite waveform
(Carlson, especially: col.3, line 41 – col.5, line 17)

and performs overdelay/racing checking for the noticed wiring
line using the maximum delay time and the minimum
delay time.
(Carlson, especially: col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

25. In regards to Claim 20, Purks teaches the following limitations:

20. The noise checking apparatus as set forth
in claim 19, characterized in that, where an
adjacent wiring line to the noticed wiring line is
turned back in such a manner as to have a plurality
of proximate portions which can electrically
interfere with the noticed wiring line,
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

said model production section (3) produces simulation models

with regard to the individual proximate portions of the adjacent wiring line and the noticed wiring line and said simulation section (4) calculates the noise waveforms using the simulation models,
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

and then said noise waveform synthesis section (5) synthesizes the noise waveforms calculated with regard to all of the proximate portions and the signal waveforrn with generation timings of the noise waveforms taken into consideration.
(Purks, especially: col.2, "Summary of the Invention"; col.3, lines 13-49; Fig.4, Items 400-414))

26. In regards to Claim 22, Purks does not expressly teach the following limitations.

However, Carlson does expressly teach the following limitations:

22. The noise checking apparatus as set forth in claim 19, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform,
(Carlson, especially: col.3, line 41 – col.5, line 17)

said noise checking section (6) calculates a pulse period of the noise composite waveform from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for the signal waveform
(Carlson, especially: Fig.4, Fig.5 and col.4, line 18 – col.4, line 40)

and performs pulse period checking of the clock waveform in the noticed wiring line based on the pulse period.
(Carlson, especially: Fig.5 and col.5, lines 35-57)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker

filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

27. In regards to Claim 23, Purks does not expressly teach the following limitations. However, Carlson does expressly teach the following limitations:

> 23. The noise checking apparatus as set forth in claim 1, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform, said noisechecking section (6) calculates a rising width and a falling width of the noise composite waveform from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for the signal waveform and performs pulse width checking of the clock waveform in the noticed wiring line based on the rising width and the falling width.

(Carlson, especially: Fig.4, Fig.5 and col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

28. In regards to Claim 24, Purks does not expressly teach the following limitations. However, Carlson does expressly teach the following limitations:

> 24. The noise checking apparatus as set forth in claim 1, characterized in that, where the signal waveform which propagates in the noticed wiring line is a clock waveform, said noise checking section (6) calculates a time required for the noise composite waveform to rise and another time required for the noise composite waveform to fall from crossing points of the noise composite waveform and a high level discrimination threshold value/low level discrimination threshold value for

> the signal waveform and performs checking of the rising time/falling time of the clock waveform in the noticed wiring line based on the times.

(Carlson, especially: Fig.4, Fig.5 and col.3, line 41 – col.5, line 17)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

29. In regards to Claim 25, Purks expressly teaches the use of UNIX-based stations on a network (see Purks, especially: Fig.3, Item 304; col.3, lines 36-41;). Official Notice is given that is well known in the art that the multi-threading and multi-tasking functions of UNIX operating system enable the creation of software applications that can take advantage of the parallel processing capabilities of multi-processor machines such as Sun Microsystems™ workstations.

However, Purks does not expressly teach the following limitations:

> 25. The noise checking apparatus as set forth in claim 19, characterized in that said simulation section (4) includes:
>
> a file dividing section for dividing the simulation model into a plurality of files;
>
> a parallel processor having a plurality of processing sections for executing simulations with regard to the plurality of files obtained by the division of said file dividing section parallelly; and
>
> a file combining section for combining simulation result files by said plurality of processing sections.

Rhodes does expressly teach the dividing of a simulation model into a plurality of files and running the files parallely on a parallel processor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with the teachings of Rhodes because "Typical MPC's [Massively Parallel Computers] allow for tens to several hundred or even thousands of nodes, and thus in principle offer the ability to apply a large amount of computational power and memory to a problem." (Rhodes, p.587, col.1, lines 4-7)

30. In regards to Claim 26, Purks expressly teaches the use of UNIX-based stations on a network (see Purks, especially: Fig.3, Item 304; col.3, lines 36-41;). Official Notice is given that is well known in the art that the multi-threading and multi-tasking functions of UNIX operating system enable the creation of software applications that can take advantage of the parallel processing capabilities of multi-processor machines such as Sun Microsystems™ workstations.

However, Purks does not expressly teach the following limitations:

> 26. The noise checking apparatus as set forth in claim 19, characterized in that said simulation section (4) includes:
>
> a file dividing section for dividing the simulation model into a plurality of files;
>
> a network interconnecting a plurality of processing sections for executing simulations with regard to the plurality of files parallelly; and
>
> a file combining section for combining simulation result files by said plurality of processing sections.

Rhodes does expressly teach the dividing of a simulation model into a plurality of files and running the files parallely on a parallel processor. Moreover, Rhodes expressly teaches an implementation called "message passing" (p.588 and Fig.1(b) and Fig.1(c)), where processing nodes communicate with one another. This communication must inherently be on some sort of network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with the teachings of Rhodes because "Typical MPC's [Massively Parallel Computers] allow for tens to several hundred or even thousands of nodes, and thus in principle offer the ability to apply a large amount of computational power and memory to a problem." (Rhodes, p.587, col.1, lines 4-7)

31. In regards to Claim 27, Purks teaches the display of routing information.

27. The noise checking apparatus as set forth in claim 19, characterized in that it further comprises:

a noise composite waveform analysis section for performing a noise analysis with regard to the noise composite waveform;
(Purks, especially: Fig.4, Items 400, 410, 414 and 416)

Also, Purks teaches the use of a user interface, and more specifically, "a keyboard and/or mouse", both of which can be used to move a cursor ("pointing device") on the screen.

a pointing device for moving the questionable wiring line displayed on said display section on said display section; and
(Purks, especially: Fig.3, Item 300 and col.3, lines 12-25)

a movement amount calculation section for calculating an actual movement amount of the questionable wiring line corresponding to an amount

of the movement by said pointing device; and that,
(Purks, especially: Fig.3, Item 300 and col.3, lines 12-25)

a display section for displaying, if a questionable wiring line which has a bad influence on the noticed wiring line is found by said noise composite waveform analysis section, a wiring line pattern including the noticed wiring line and the questionable wiring line;
(Purks, especially: col.2, lines 25-59)

However, Purks does not expressly teach the display of rerouted circuit layout information.

Huang does expressly teach the display of rerouted circuit layout information:

in the state wherein the questionable wiring line is moved by the actual movement amount, said model production section (3), said simulation section (4), said noise waveform synthesis section (5) and said noise checking section (6) are operated again and the noise composite waveform after the movement of the questionable wiring line is displayed on said display section.
(Huang, especially: Fig.2, Items 204, 206, 208, 210 and 212; and col.5, lines 50-62)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

32. In regards to Claim 28, Purks teaches the following limitations:

28. The noise checking apparatus as set forth in claim 19, characterized in that it further comprises:

a noise composite waveform analysis section for performing a noise analysis with regard to the noise composite waveform;

(Purks, especially: Fig.4, Items 400, 410, 414 and 416)

Purks teaches the display of routing information (see Fig.4, Items 400, 410, and 414) in the limitations below. However, Purks does not expressly teach the display of rerouted circuit layout information.

Huang does expressly teach the display of rerouted circuit layout information:

a display section for displaying, if a noise waveform which has a bad influence on the noticed wiring line is found by said noise composite waveform analysis section, the noise waveform; and
(Huang, especially: Fig.2, Items 210 and 212; and col.5, lines 50-62)

a timing changing amount calculation section for calculating a timing changing amount of the noise waveform corresponding to an amount of the movement by said pointing device and dynamically changing a generation timing of the noise waveform by the timing changing amount.
(Huang, especially: Fig.2, Items 210 and 212; and col.5, lines 50-62)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

33. In regards to Claim 29, Purks does not expressly teach the display of circuit-related noise data that has been dynamically changed due to re-routing.

Huang, on the other hand, does teach the following limitations:

29. The noise checking apparatus as set forth in claim 28, characterized in that said noise waveform synthesis section (5) and said noise checking section (6) are operated again in a state wherein the generation timing of the noise waveform is changed, and the noise composite waveform after the timing changing of the noise waveform is displayed on said display section.

(Huang, especially: Fig.2, Items 204, 206, 208, 210 and 212; and col.5, lines 50-62)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

34. In regards to Claim 30, Purks does not expressly teach the calculation of pin resistance, and its effect on signal integrity. Huang, on the other hand, does teach the following limitations:

30. The noise checking apparatus as set forth in claim 19, characterized in that it further comprises:

a damping resistance value calculation section for calculating, where ringing is superposed on the noise composite waveform, a damping resistance value with which the ringing can be eliminated if the damping resistor is added to the noticed wiring line;

a part searching section for searching for candidate part data corresponding to the damping resistance value calculated by said damping resistance value calculation section;

a displaying section for displaying the candidate part data searched out by said part searching section; and

a selective inputting section for selecting apart from among the candidate part data displayed on said display section; and that,

in a state wherein the part selected from among the candidate part data is added to the noticed wiring line, said model production section (3), said simulation section (4), said noise waveform synthesis section (5) and said noise checking section (6) are operated again, and the noise composite waveform after the addition of the part is displayed on said display section.

(Huang, especially: col.9, line 23 - col.11, line 6)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

35. In regards to Claim 31, Purks does not expressly teach the distributions of the minimum and maximum values of time axis waveforms. Carlson does teach the following limitations:

31. The noise checking apparatus as set forth in claim 19, characterized in that said noise waveform synthesis section (5)
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

calculates time axis direction distributions of a maximum value and a minimum value of the signal waveform with a delay variation taken into consideration
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

and calculates time axis direction distributions of a maximum value and a minimum value of a noise waveform with a noise generation timing variation taken into consideration for each kind of noise, and
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

synthesizes the time axis direction distributions of the maximum value and the minimum value of the signal waveform and the time axis direction distributions of the maximum value and the minimum value of the noise waveforms to obtain time axis direction distributions of the maximum value and the minimum value as the noise composite waveform.
(Carlson, especially Fig.3-4, Items 300 and 400, and associated text)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Purks with those of Carlson, because in order "to more efficiently identify the signals that cause the timing

problems, it is useful to perform timing filtering, logic filtering, cross-talk attacker filtering, and safety window filtering on the electronic circuits" (Carlson: col.3, lines 3-8).

~~36. In regards to Claim 32, Purks does not expressly teach checking if the minimum~~ and maximum values of time axis waveforms satisfy the expected values for a check object pin.

Huang, on the other hand, does teach the calculation of resistance pin values, and determining circuit elements and delays, as claimed in the following limitations:

32. The noise checking apparatus as set forth in claim 31, characterized in that said noise checking section (6) discriminates whether or not both of the time axis direction distributions of the maximum value and the minimum value of the noise composite waveform satisfy logical expected values for a check object pin to perform the noise checking.
(Huang, especially: col.9 line 23 to col.11, line 6; and Fig.2, Items 224, 226, 208, 212)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Purks with those of Huang, because while Purks would identify the design problem, Huang's re-routing of the circuit would automatically solve the design problem.

Response to Arguments

Claim Rejections - 35 USC § 103

37. In regards to Claim 1, Applicants unpersuasively argue (paper #13, p.19) that

> However, even if Purks is reviewed precisely, it is apparent that the cross-talk noise as used in Purks does not include the meaning of synthesis with a signal waveform. In the dictionary (WordNet ® 1.6, © 1997 Princeton University), the cross-talk noise is defined as an unwanted signal via an accidental coupling between transmission lines. According to this definition, it is natural to interpret the cross-talk noise as a signal component which is placed into an original signal waveform by coupling, and it is common sense also to engineers having ordinary skill in the art that the cross-talk noise is used with such meaning. Accordingly, the assertion based on the citation of Purks and the afore-mentioned dictionary that the synthesis of a noise waveform and a signal waveform as recited in claim 1 is incorrect."

On the one hand, the Applicants argue (paper #13, p.19) that "it is natural to interpret the cross-talk noise as a signal component which is placed into an original signal waveform by coupling, and it is common sense also to engineers having ordinary skill in the art that the cross-talk noise is used with such meaning." Examiner agrees with the Applicants on this point.

On the other hand, the Applicants argue (paper #13, p.19) that "Accordingly, the assertion based on the citation of Purks and the afore-mentioned dictionary that the synthesis of a noise waveform and a signal waveform as recited in claim 1 is incorrect."

Examiner finds that "coupling" and "cross-talk" are forms of "synthesis" of two signals, and therefore Applicants' argument is not persuasive. This interpretation is supported by the definition of the word "synthesize" as "to combine by synthesis; to unite", according to the Webster's Unabridged Dictionary, 1998. Examiner also notes that "cross-talk" is defined as "the presence of an unwanted signal via an accidental coupling", according to WordNet ® 1.6, © 1997 Princeton University.

38. In regards to Claim 1, Applicants also unpersuasively argue (paper #13, p.19) that "The Office Action asserts that Carlson expressly teaches the use of

'switching noise'. However, if Carlson is reviewed precisely, no such teaching can be found."

Examiner respectfully disagrees with the Applicants. Carlson teaches (col.3, lines 57-60) that "The static timing device 200 also captures the latest up and down switching, including transition times, called maximum timing." Carlson also teaches (col.4, lines 40-56) that "A slow-down dynamic delay variation generally occurs when an attacker signal switches in the opposite direction as that of the victim signal", and "One way to emulate this is by using the static timing device 200. If the static timing device 200 indicates that the victim signal does not complete its transition before a maximum delay, it can be concluded that the victim signal is experiencing a slow-down dynamic delay variation."

While not using the specific term "switching noise", Carlson teaches a noise that is generated by the switching of the attacker signal, and that modifies the switching of the victim signal. Moreover, it is inherent that this "switching noise" is an attribute of the cross-talk between the two signals.

Therefore, Examiner finds that "interpret[ing] the cross-talk noise as a signal component which is placed into an original signal waveform by coupling" (Applicants admit in paper #13, p.19 that this is well known in the art) corresponds to the claimed limitation of "synthesizing, with generation timings of the noise waveforms taken into consideration, the signal waveform and the noise waveforms calculated for each of the plurality of kinds of noise".

39. In regards to Claim 1, Applicants also unpersuasively argue (paper #13, p.20) that "However, where reflection noise exists ... 'timing filtering' has little significance. Instead, there is a demerit in that it increases the processing time ... Therefore, a signal having noise problems can really be identified much more efficiently than Purks or Carlson." Applicants are arguing features that are not in the claims. Applicants' argument therefore is not persuasive.

40. In regard to Claim 1, Applicants also unpersuasively argue (paper #13, p.23) that "... it is not known what the Office Action (paper #8) intends to communicate with the term 'noise filter' ... The Office Action asserts that Purks expressly teaches separately generating a noise signal and then injecting it into a victim signal. However, such description or illustration cannot be found from Purks."

In regards to the 'noise filter' reference, Examiner noted in paper #8 that "filter" is defined as "removes something from whatever passes through it", according to WordNet ® 1.6, © 1997 Princeton University. Examiner also noted that "noise filters" inherently check for and remove noise.

Moreover, Examiner noted that the Carlson reference teaches "pre-filtering on victim signals" (see col.4 and Fig.1, item 115), which Examiner found to be functionally equivalent to noise checking. Carlson also specifically teaches the elimination of voltage spike signals (col.4, lines 34-40). Examiner found this to be sufficient evidence that Carlson teaches noise checking.

In regards to Purks teaching separately generating a noise signal and then injecting it into a victim signal, Examiner cited the following sections in paper #8:

(col.3, lines 40-50, col.4, lines 40-52; col. 5, lines 22-32; col.5, lines 50-55; col.6, lines 15-20). Examiner has copied three of these cited sections for the Applicants' convenience:

The routine 405 traps reference signal transition events to reset a window viewpoint, and traps non-reference signal transitions to be combined with resolution information to build a structure of activity time periods related to the preceeding reference signal edge.
(col.4, lines 46-52)

A signal net laid in parallel to nets AS (active time: 41-75) and DS (active time: 41-90) will accumulate the sum of any crosstalk contribution by either of the two nets during the overlapping active time period.
(col.5, lines 27-31)

The foregoing is a complete description of a specific embodiment of the present invention which offers a crosstalk analysis system that is capable of generating real-world estimates of crosstalk noise based on forward-annotated inter-signal timing information.
(col.6, lines 15-20)

Examiner interprets that the "... accumulat[ing] sum of any crosstalk contribution ..." corresponds to a noise signal that is injected into a victim signal.

41. In regards to Claim 1, Applicants unpersuasively argue (paper #13, pp.19-20) that

> The Office Action asserts that Carlson expressly teaches the use of "switching noise". However, if Carlson is reviewed precisely, no such teaching can be found. Therefore, it is incorrect to assert that "calculated for the individual of the plurality of kinds of noise" as recited in Claim 1 is expressly taught by Carlson.

Examiner respectfully disagrees. One of the sections of Carlson that was cited in the original rejection of Claim 1 was col.3, line 1 to col.5, line 34. This section of Carlson describes switching noise in detail. For example, the cited section includes the following selected teachings:

> The static timing device **200** captures the earliest up and down switching events of signals, including transition times, called minimum timing. The static timing device **200** also captures the latest up and down switching, including transition times, called maximum timing.
> (Carlson, col.3, lines 57-61)

> Referring back to **Fig.1**, at block **115**, pre-filtering upon the victim signals is performed using capacitance ratio. Consider a victim node that is held at a logic low, and a first attacker signal cross-talks with the victim signal and causes a signal noise spike upon the victim node.
> (Carlson, col.4, lines 18-22)
>
> A slow-down delay variation generally occurs when an attacker signal switches in the opposite direction as that of the victim signal.
> (Carlson, col.4, lines 41-43)
>
> One way to emulate this is by using the static timing device **200**. If the static timing device **200** indicates that the victim signal does not complete its transition before a maximum delay, it can be concluded that the victim signal is experiencing a slow-down dynamic delay variation. A slow-down dynamic delay variation is shown in **Fig.3**, where the victim signal fails to complete its transition before the maximum delay timeline **300** plus the set-up time margin **310**.
> (Carlson, col.4, lines 52-60)
>
> A speed-up dynamic delay variation generally occurs when an attacker signal switches in the same direction as that of the victim signal.
> (Carlson, col.4, lines 61-63)
>
> One way to emulate this is by using the static timing device **200**. When the static timing device **200** indicates that the victim signal has completed its transition before the minimum delay period, a speed-up dynamic delay variation has occurred, as specified at block **125**. A speed-up dynamic delay variation is shown in **Fig.4**, where the victim signal switches to a new voltage level before the minimum delay timeline **400** minus the hold time margin **410**.
> (Carlson, col.5, lines 5-12)

Therefore, Examiner respectfully disagrees with the Applicants, and finds that Carlson teaches two different switching noises, which it calls "speed-up dynamic delay variation" or "slow-down dynamic delay variation".

42. In regards to Claim 2, Applicants argue (paper #13, p.20) that "no description relating to the invention as recited in claim 2 is found in Purks, nor any description is found which suggests that the teachings of Purks could have been modified to arrive at the invention as recited in claim 2."

Examiner respectfully disagrees. Examiner finds that the functionally described in the cited "Summary of the Invention" (Carlson, col.2) corresponds to

the claimed limitations in claim 2. The Applicants have not provided any specifics in their argument, and therefore it is not persuasive.

43. In regards to cancelled Claims 3, Applicants argue (paper #13, pp.20-21) that "no description relating to the invention as recited in claim 3 is found in Carlson, nor any description is found which suggests that the teachings of Carlson could have been modified to arrive at the invention as recited in claim 3."

Examiner assumes that the Applicants are arguing the merits of a claim that has been cancelled because the limitations of this cancelled claim have been incorporated into independent claim 1.

Examiner respectfully disagrees with the Applicants' arguments, and finds that the previously cited sections of Carlson (col.3, line 41 – col.5, line 17) teach the claimed limitations. The Applicants have not provided any specifics in their argument, and therefore it is not persuasive.

44. In regards to Claims 4-6, Applicants argue (paper #13, p.21) that "no description relating to the invention as recited in [claims 4-6] is found in any of Purks and Carlson", and "no description is found which suggests that the teachings of Purks or Carlson could have been modified to arrive at the invention as recited in [claims 4-6]."

Examiner respectfully disagrees with the Applicants' arguments, and finds that the previously cited sections of Carlson do teach the claimed limitations. The Applicants have not provided any specifics in their argument, and therefore it is not persuasive.

45. In regards to Claim 11, Applicants argue (paper #13, p.21) that "Claim 11 is directed to dynamic displaying on a display section of a variation of a noise synthesis waveform when the generation timing of a noise waveform is changed. Meanwhile, 're-routing' disclosed in Huang relates to a change of a wiring route and has nothing to do with the feature recited in claim 11." Examiner has found Applicants' argument to be persuasive, and has withdrawn the rejection.

46. In regards to Claim 12, Applicants argue (paper #13, p.22) that "Claim 12 is directed to an automatic calculation of a damping resistance value with which a correct signal transmission waveform can be obtained, and displaying of candidate part data corresponding to the calculated damping resistance value. Meanwhile, 're-routing' disclosed in Huang relates to a change of a wiring route and has nothing to do with the feature recited in claim 11."

Examiner respectfully disagrees. The cited section of Huang (col.9, line 23 - col.11, line 6), includes a specific teaching of calculating an effective resistance: (see col.10, lines 35-50; and col.10, line 62 to col.11, line 6). Moreover, col.12, lines 60-65 and Fig.16 teach an output display based upon parameter values.

47. In regards to Claim 13, Applicants argue (paper #13, p.22) that "The Office Action asserts that from the disclosure of Figs.3 and 4 of Carlson, a skilled person arrive at 'checking noise using the distributions of minimum and maximum values of time axis' as recited in claim 13. However, Figs.3 and 4 of Carlson merely show build up [sic] waveforms of a signal waveform. Accordingly,

it would have been impossible at all to arrive at the invention as recited [in] claim 13 from Figs.3 and 4 of Carlson."

Examiner respectfully disagrees. The section of Carlson that is cited in the rejection is "Carlson, especially Fig.3-4, Items 300 and 400, and associated text." Col.4, lines 56-60 and col.5, lines 8-11, are explicit that Items 300 and 400 in Figs.3-4 represent "a slow-down dynamic delay variation ... where the victim signal fails to complete its transition before the maximum delay timeline 300 plus the set-up time margin 310" and "a speed-up dynamic delay variation ... where the victim signal switches to a new voltage level before the minimum delay timeline 400 minus the hold time margin 410." Examiner is therefore maintaining the rejection.

48. In regards to Claim 13, Applicants also argue (paper #13, p.24) that "The Office Action [paper #8] asserts that Purks teaches synthesizing cross-talk noise. However, although the description of addition (sum) of cross-talk noise is found in Purks, Purks is quite silent of any other noise component." Examiner has already addressed this argument in paragraph 38 of this Office Action.

In particular, the Carlson reference, while not using the specific term "switching noise", teaches a noise that is generated by the switching of the attacker signal, and that modifies the switching of the victim signal. Moreover, it is inherent that this "switching noise" is an attribute of the cross-talk between the two signals.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

49. In regards to Claim 13, Applicants also argue that "the description that a signal waveform is synthesized with a noise waveform simply cannot be found in Purks." Examiner has already addressed this argument in paragraph 40 of this Office Action.

50. In regards to Claim 14, Examiner has found Applicants' arguments to be persuasive, and has withdrawn the previous rejection based on Purks in view of Huang. The new rejection is based on Purks in view of Carlson.

51. In regards to Claim 19, Applicants repeat the arguments presented in regards to Claim 1. The Applicants are referred to Examiner's responses to the arguments regarding Claim 1.

52. Applicants have not provided arguments for the remaining claims.

Allowable Subject Matter

53. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and all intervening claims.

54. In regards to Claim 11,

> 11. The noise checking method as set forth in claim 10, characterized in that the synthesis of the noise composite waveform and the noise checking are performed again using the noise waveform whose generation timing has been dynamically changed, and the noise composite waveform after the timing changing of the noise waveform is displayed on said display section.

Applicants argue (paper #13, pp.21) that "Claim 11 is directed to dynamic displaying on a display section of a variation of a noise synthesis waveform when the generation timing of a noise waveform is changed. Meanwhile, 're-routing' disclosed in Huang relates to a change of a wiring route and has nothing to do with the feature recited in claim 11." Moreover, neither the Purks nor the Carlson references teach the claimed limitations of Claim 11 either individually or in combination.

Conclusion

55. Applicant's arguments filed 2/6/04 have been fully considered but they are not persuasive.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (703) 306-0297. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on (703) 305-9704. Any response to this office action should be mailed to:

Director of Patents and Trademarks
Washington, DC 20231

Hand-delivered responses should be brought to the following office:

4th floor receptionist's office
Crystal Park 2
2121 Crystal Drive
Arlington, VA

The fax phone numbers for the organization where this application or proceeding is assigned are:

All communications:	(703) 872-9306

Or, alternatively:

Official communications:	(703) 746-7239
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After Final communications	(703) 746-7238

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is: (703) 305-3900.

Ayal I. Sharon

Art Unit 2123

April 26, 2004

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